Points to Consider...

Discussion Point	Headline	General Theme
Our carbon footprint	Approximately 10tonnes per person per year	The UK accounts for 1.1% of global CO_2 emissions, and has about 0.84% of the world's population. For the UK the range is from 6tonnes of CO_2 per person per year (official UK government estimate) to 13tonnes (estimates by various think tanks which includes all equivalent carbon emissions).
Responsible reproduction	A steady global population of 2.5billion pre 1940. Super exponential population growth since then, now over 8 billion and still rising	A steady 2.5billion up to 1940. A super exponential growth since then now over 8billion, probably due to a combination of understanding how to use oil and gas, the invention of factory farming, the discovery or Penicillin and the invention of the Harber-Bosch process to create fertilisers
Air travel	A round trip to New York: 3tonnes per person A round trip to Johannesburg: 5tonnes per person A round trip to Tokyo: 5tonnes per person A round trip to Sydney: 9tonnes per person	Typical carbon emissions for each mode of transport are as follows: • Flying: 0.43kgCO_2e per passenger mile • Car: 0.359kgCO_2e per mile, 0.239kgCO_2e per passenger mile (assuming 1.5passengers) • Train (diesel): 0.239kgCO_2e per passenger mile So on the face of it, air travel doesn't seem so bad – in terms of fuel efficiency, it's only twice as bad as a car or diesel train, but the real issue is the sheer quantum of miles travelled in a single flight can add up very quickly and blow your carbon footprint out of the water
Cars & electric vehicles	Car travel accounts for around 14% or 1.4tonnes per person per year, assuming an average person travels 5,000miles a year. The average car does about 10,000miles a year which equates to 3.5tonnes per year for a traditional petrol car. An electric car, plugged into renewable electricity sources can make a massive dent into this	30,000miles to break even due to added embodied carbon of the battery and residual carbon in our electricity network, but this is reducing all the time as national electricity grids decarbonise, plus the embodied carbon to obtain the rare earth metals reduces, plus the need for rare earth metals decreases. Need an off-street parking space. A standard domestic charger is rated at 7kVA. A typical battery cable of doing 350miles is rated at 100kWh so it takes about 100/7=15hrs to do a full re-charge, so the need for superfast chargers is obvious when making long journeys
Heating & insulation	Heating accounts for around 16% or 1.4tonnes per person per year, so insulating (loft, cavity walls, double glazing, floor) can all help to reduce this	

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Heat pumps	As with electric cars, a heat pump plugged into renewable electricity sources can make a massive dent into related carbon emissions	Seen as the go to technology for heating and hot water production, can even generate cooling. Not easily retrofitted into existing buildings, especially older, more leaky buildings. Double glazing is an almost must have to be able to get this technology to work
Direct electric	Similar to heat pumps only they are 3times less efficient than heat pumps so expect a hefty heating bill	Generally can be used, but will triple your annual energy bill and your incoming supply size may need to be up-graded
Biomass boilers	A recognised low carbon technology but has its critics	Carbon cycle. Wood sources. Clean air. Reliability
Log burners	A recognised low carbon technology but has its critics	Carbon cycle. Wood sources. Clean air
Photovoltaics	Great to couple this near maintenance free technology with electricity driven technologies such as heat pumps and electric cars	A typical domestic 4kWp array used to offset about 1.5tonnes of CO_2 a year, but as the government invests in more renewable electricity generators (such as off-shore wind) the carbon factor of our national electricity network is reducing, meaning the same 4kWp PV array now only off-sets around 0.45tonnes of CO_2 per year
Battery storage	No overall CO_2 saving	Same issues as cars, but no overall CO_2 saving benefit
Hydrogen boilers	Perhaps the only technology available to retro-fit into the mile after mile of late Victorian terrace houses we have here in the UK as it avoids the space requirement issues and flow temperature issues of heat pumps. But it is currently 6times less efficient than a heat pump, and half as efficient as direct electric panel heaters	As with biodiesel being introduced at the petrol pumps, the government plans to introduce 20% hydrogen into our national gas network. 3 types of carbon; grey (CO_2 intensive), blue (captures CO_2) and green (uses electricity from renewable sources to drive hydrogen production from water).
Food choices	25% c2.5tonnes per person per year which could reduce to c1.25tonnes per person per year if a plant based diet is pursued	6 times less energy efficient than heat pumps
Off-setting	Scam	6 times less energy efficient than heat pumps